

PC Card (PCMCIA) Interface Switch

FEATURES

- Single SO-8 Package
- CMOS-Logic Compatible Inputs
- Slow V_{CC} Ramp Time
- Smart Switching
- Extremely Low R_{ON}
- Reverse Blocking Switches
- Low Power Consumption
- Safe Power Up

DESCRIPTION

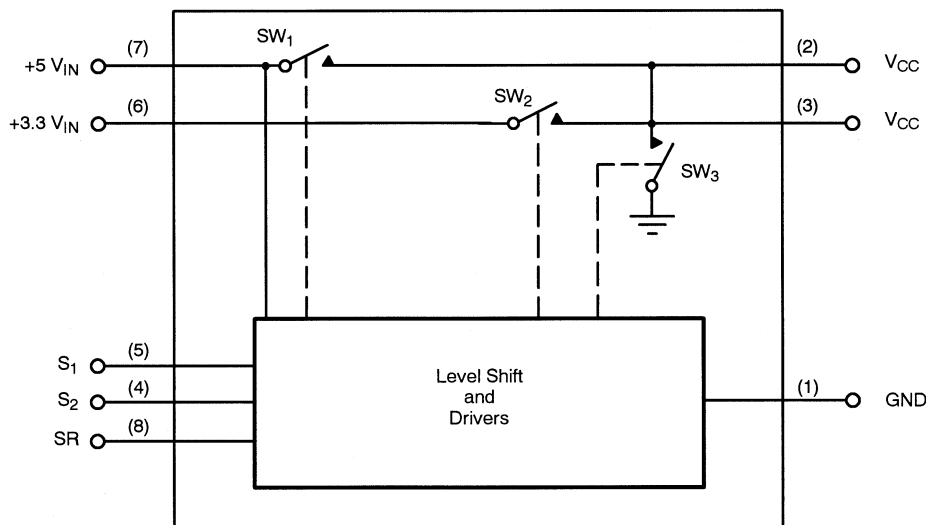
The Si9706DY offers an integrated solution for PC Card power interfaces that only require V_{CC} switching. This part is ideal for systems that operate at 5 V and provide V_{PP} from the main supply or from a dedicated Flash RAM 12-V supply.

The Si9706DY operates off the 5-V supply and has built-in level shifting for gate drive. Internal logic protects against a control logic error that would short 5 V to the 3.3-V supply. This protection logic also allows the Si9706DY to be

configured for positive or negative control logic for compatibility with a variety of PC Card controllers. These control inputs are CMOS logic compatible and can be driven to 3.3 V or 5 V.

The Si9706DY PC Card interface switch is packaged in a narrow body SO-8 package and is rated over the industrial temperature range -40 to 85°C.

FUNCTIONAL BLOCK DIAGRAM



**ABSOLUTE MAXIMUM RATINGS**

Voltages Referenced to Ground

+5 V _{IN}	7 V	PD Max ^b (T _A = 25°C)	1.59 W
+3.3 V _{IN}	7 V	(T _A = 85°C)	0.63 W
S ₁ , S ₂ (CMOS Inputs)	7 V	Junction Temperature	125°C
All Pins	-0.5 V	Thermal Ratings ^b : R _{ΘJA}	63 °C/W
I _{OUT} V _{CC} ^a	4 A	Notes	

a. Pins 2, 3 connected together externally.
b. Mounted on 1-IN², FR4 PC Board.

RECOMMENDED OPERATING CONDITIONS

+5 V _{IN} (must be present)	5 V ±10%	V _{CC} Load Capacitance	150 μF Max
+3.3 V _{IN}	3.3 V ±10%	Notes	
C _{SR}	33 nF	a. Pins 2, 3 connected together externally.	
I _{OUT} V _{CC} ^a	2 A		

SPECIFICATIONS							
Parameter	Symbol	Test Conditions Unless Otherwise Specified C _{SR} = 33 nF, +5 V _{IN} = 5 V +3.3 V _{IN} = 3.3 V, Low ≤ 0.8 V, High ≥ 2.2 V	Limits -40 to 85°C			unit	
			Min ^a	Typ ^b	Max ^a		
Switch SW₁							
On-Resistance	R _{ON}	I = 500 mA, S ₁ = High S ₂ = Low	T _A = 25°C	58	70	mΩ	
			T _A = 85°C	73	90		
Off Current (V _{CC})	I _{OFF}	+5 V _{IN} = 5.5 V, V _{CC} = 0 V S ₁ = S ₂ = Low	T _A = 25°C		1	μA	
			T _A = 85°C		10		
Rise Time	t _{S1(on)}	S ₂ = Low, See Figure 1.		0.2	1.7	ms	
Fall Time	t _{S1(off)}			10	30		50
Switch SW₂							
On-Resistance	R _{ON}	I = 500 mA, S ₂ = High S ₁ = Low	T _A = 25°C	44	55	mΩ	
			T _A = 85°C	55	70		
Off Current (+3.3 V _{IN})	I _{OFF}	+3.3 V _{IN} = 3.6 V, V _{CC} = 0 V S ₁ = S ₂ = Low	T _A = 25°C		1	μA	
			T _A = 85°C		10		
Rise Time	t _{S2(on)}	S ₁ = Low, See Figure 1.		0.1	0.9	ms	
Fall Time	t _{S2(off)}			5	20		40
Switch SW₃							
On-Resistance	R _{ON}	I = 2 mA, S ₁ = S ₂ = Low	T _A = 25°C	140	400	Ω	
			T _A = 85°C	200	500		
Power Supply							
+5 V _{IN} Current Input (on)	I _{+5VIN(1)}	S ₁ = 0 V, S ₂ = 3 V		20	50	μA	
	I _{+5VIN(2)}	S ₁ = 3 V, S ₂ = 0V		20	50		
+5 V _{IN} Current Input (off)	I _{+5VIN(3)}	S ₁ = S ₂ = 0 V		<1	10		

SPECIFICATIONS						
Parameter	Symbol	Test Conditions Unless Otherwise Specified $C_{SR} = 33 \text{ nF}$, $+5 V_{IN} = 5 \text{ V}$ $+3.3 V_{IN} = 3.3 \text{ V}$, Low $\leq 0.8 \text{ V}$, High $\geq 2.2 \text{ V}$	Limits -40 to 85°C			unit
			Min ^a	Typ ^b	Max ^a	
Switch Control Inputs S₁, S₂						
Input Voltage High	$V_{I(H)}$	$+5 V_{IN} = 5.5 \text{ V}$	2.2	1.8		V
		$+5 V_{IN} = 4.5 \text{ V}$	2.2	1.6		
Input Voltage Low	$V_{I(L)}$	$+5 V_{IN} = 5.5 \text{ V}$		1.6	0.8	
		$+5 V_{IN} = 4.5 \text{ V}$		1.4	0.8	
Input Current High	$I_{I(H)}$	$S_1, S_2 = 5 \text{ V}$			1.0	μA
Input Current Low	$I_{I(L)}$	$S_1, S_2 = \text{GND}$	-1.0			

Notes

- a. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum.
- b. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.

TIMING WAVEFORMS

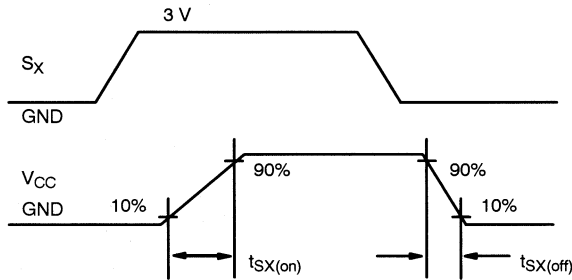


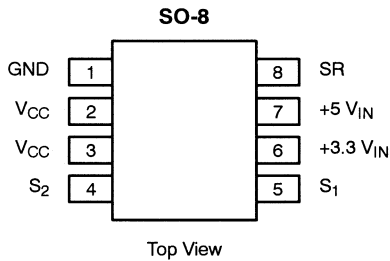
FIGURE 1. Switch Ramp

TRUTH TABLE				
S ₁	S ₂	Switch 1	Switch 2	Switch 3
0	0	Off	Off	On
0	1	Off	On	Off
1	0	On	Off	Off
1	1	Off	Off	On

Notes

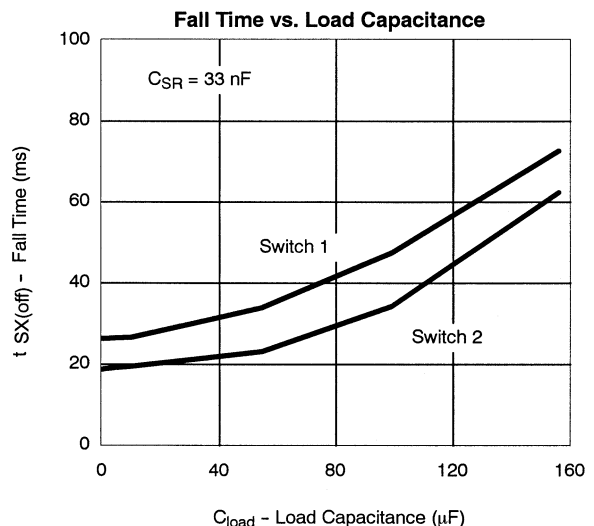
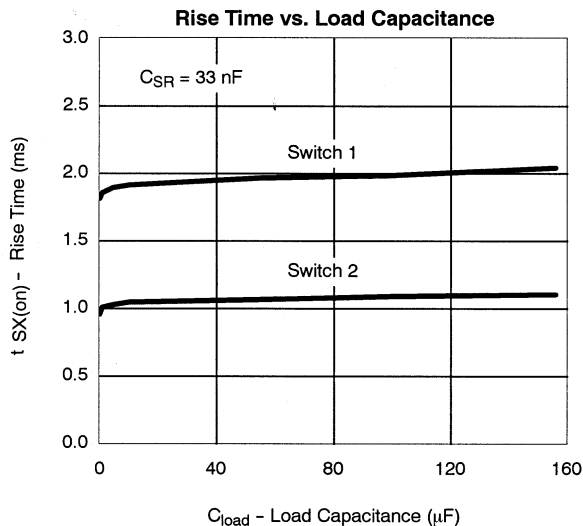
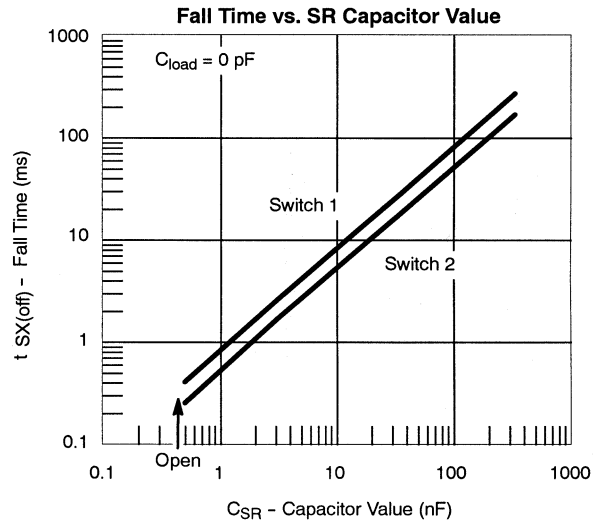
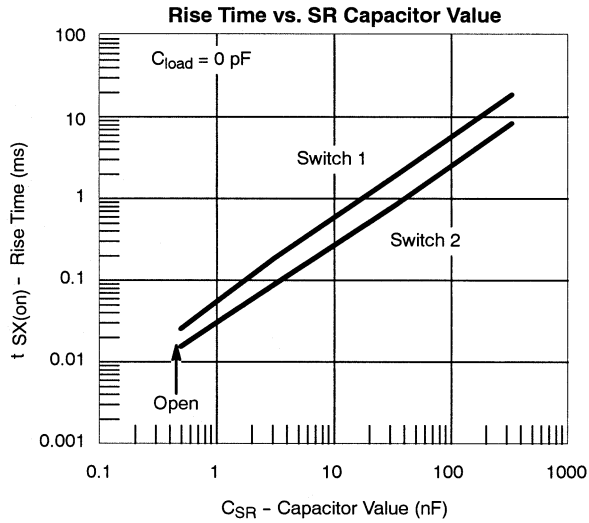
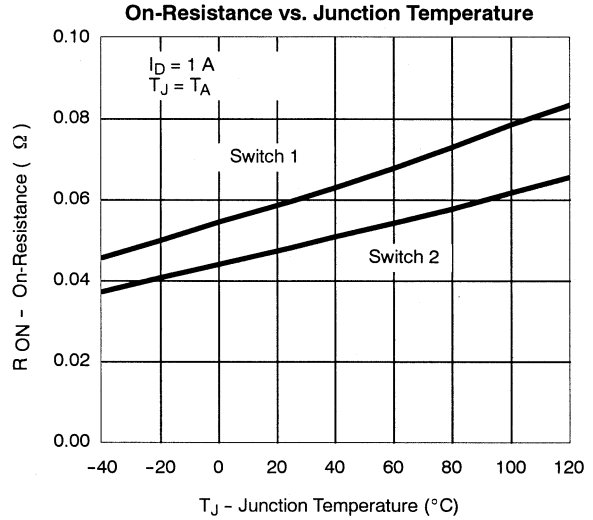
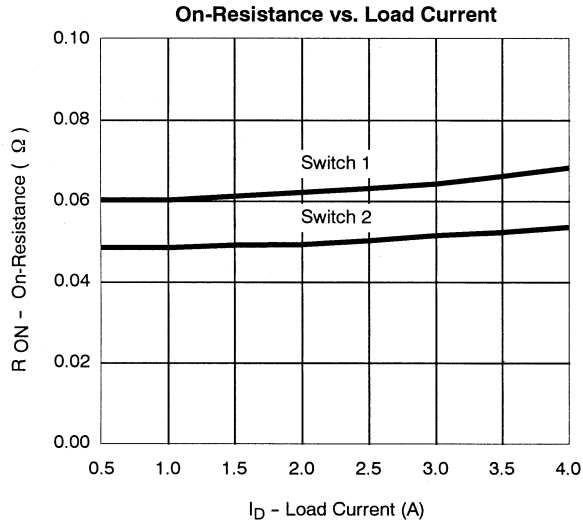
- a. The smart switching of the Si9706DY avoids potential host damage by defaulting to off during error conditions.

PIN CONFIGURATION AND DESCRIPTION



PIN DESCRIPTION		
Function	Pin Number	Description
S ₁	5	Control input for selecting $+5 V_{IN}$ to V_{CC} .
S ₂	4	Control input for selecting $+3.3 V_{IN}$ to V_{CC} .
GND	1	Ground connection.
V_{CC}	2, 3	Supply voltage to slot.
$+3.3 V_{IN}$	6	$+3.3\text{-V}$ supply.
$+5 V_{IN}$	7	$+5\text{-V}$ supply.
SR	8	Slew rate control pin.

TYPICAL CHARACTERISTICS (25°C UNLESS OTHERWISE NOTED)





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